

## TWO NEW GENERA OF ECCRITOTARSINI (HETEROPTERA: MIRIDAE: BRYOCORINAE) FROM SOUTHEAST ASIA

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The new genera *Diocleroides* and *Gressittiana* are described to accommodate three new species of eccritotarsine Miridae from southeast Asia. *Diocleroides sulawesi* and *D. philippinensis* are described from material collected in Sulawesi, Indonesia and the Philippines, respectively, and *Gressittiana kuchingensis* is described from specimens collected in Sabah and Sarawak, East Malaysia. The structures of the male genitalia are illustrated for all species, and dorsal habitus views are given for type species, *D. sulawesi* and *G. kuchingensis*. Scanning electron micrographs of the head and pronotum, metathoracic scent efferent system, and the pretarsus also are provided for the type species. The relationships of *Diocleroides* and *Gressittiana* to other genera of Old World Eccritotarsini are discussed.

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Key words. – Heteroptera; Miridae; Bryocorinae; Eccritotarsini; *Diocleroides*; *Gressittiana*; new genera; new species; Philippines; Indonesia; East Malaysia.

Continuing studies of the Eccritotarsini of the Old World by the senior author have revealed three undescribed species that cannot be placed in any known genus of the tribe. The new genera *Diocleroides* and *Gressittiana* are here described to accommodate these species and to make the generic names and character information available for an ensuing paper on the cladistic relationships of the Old World genera of the tribe.

Terminology for external characters and structures of the male genitalia follows that of Stonedahl (1988). References to position regarding the vesica of the male genitalia (e.g., left versus right, basal versus distal) are made from dissected preparations with the inner (anterodorsal relative to its position within the genital capsule) surface of the vesica facing upward and the apex orientated away from the observer (figs. 11, 15). All measurements are given in millimeters. Body length is measured from the tip of the tylus to apex of the hemelytral membrane. Abbreviations used in the locality data to denote specimen depositories correspond to the institutions listed in the acknowledgments.

### SYSTEMATIC PART

#### *Diocleroides* gen. n.

Diagnosis. – Similar to *Dioclerus* Distant but distinguished by the more elongate body; strongly concave posterior margin of head; narrower anterior collar of pronotum; entire anterolateral margins of hemelytra, without strong serrations; and by the structure of the male genitalia, especially the strongly produced sensory lobe of the left paramere (figs. 7, 8, 13) and more extensively sclerotized vesica (figs. 11, 15).

Description of male. – Macropterous, length 3.45–3.60; pale grayish white ground colour, sometimes with brown to fuscous markings on pronotum, scutellum, hemelytra and venter; pronotum, scutellum and hemelytra, except embolium and outer half of cuneus, punctate; dorsum with moderately dense covering of pale, suberect, simple setae, length of setae 1.0–1.5 times greatest diameter of antennal segment I. Head: Much broader than long in dorsal view; posterodorsal margin strongly concave, carinate between eyes; vertex slightly depressed anterior to ca-

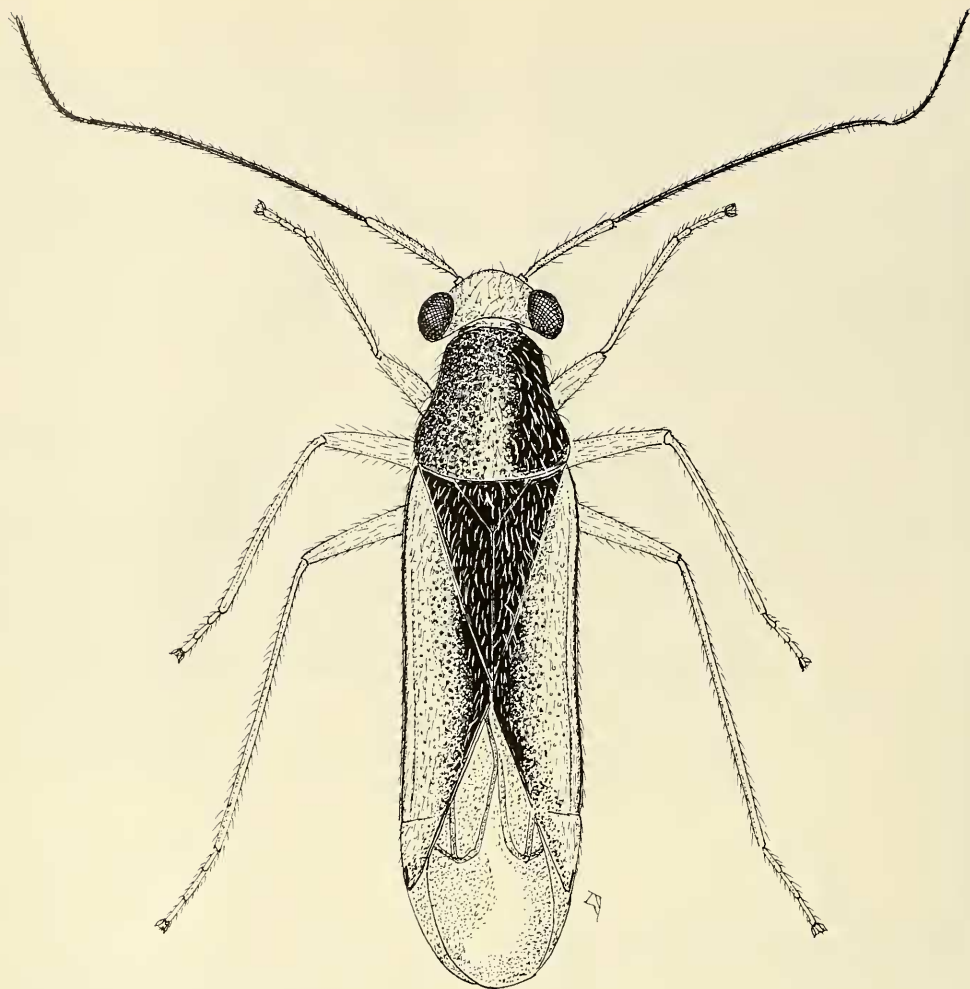
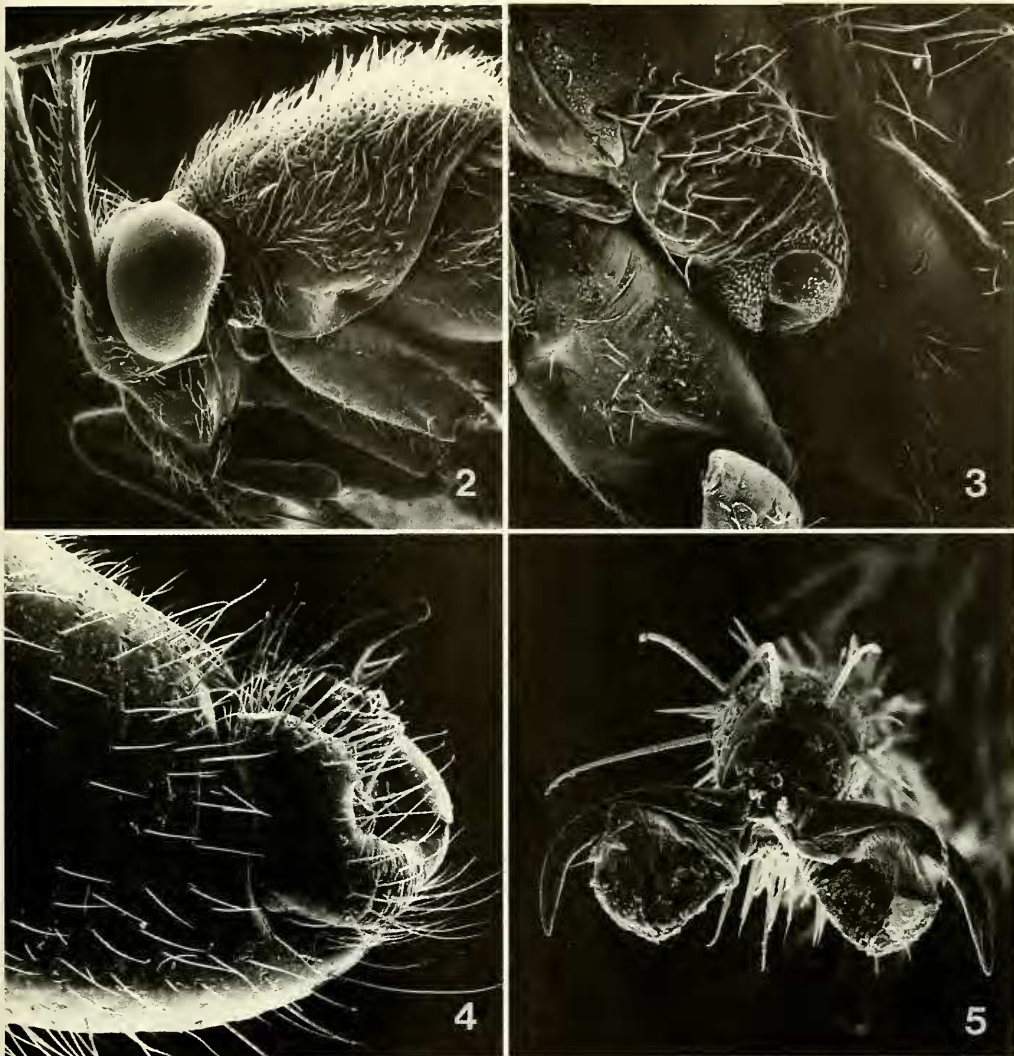


Fig. 1. *Diocleroides sulawesi*, dorsal habitus male.

rina; frons moderately convex, only slightly produced anterior to antennal fossae, meeting tylus along broad depression; maxillary and mandibular plates weakly swollen; genae broadly developed; bucculae short; buccal cavity small, subspherical; gula elongate, slightly convex; labium reaching between mesocoxae, segment I much thicker than remaining segments; eyes prominent, projecting laterally beyond and slightly behind anterolateral angles of pronotum, weakly elevated above dorsal surface of head, posterior margin conforming to posterior curvature of head, occupying approximately half of head height in lateral view; antennal fossa nearly contiguous with anterior

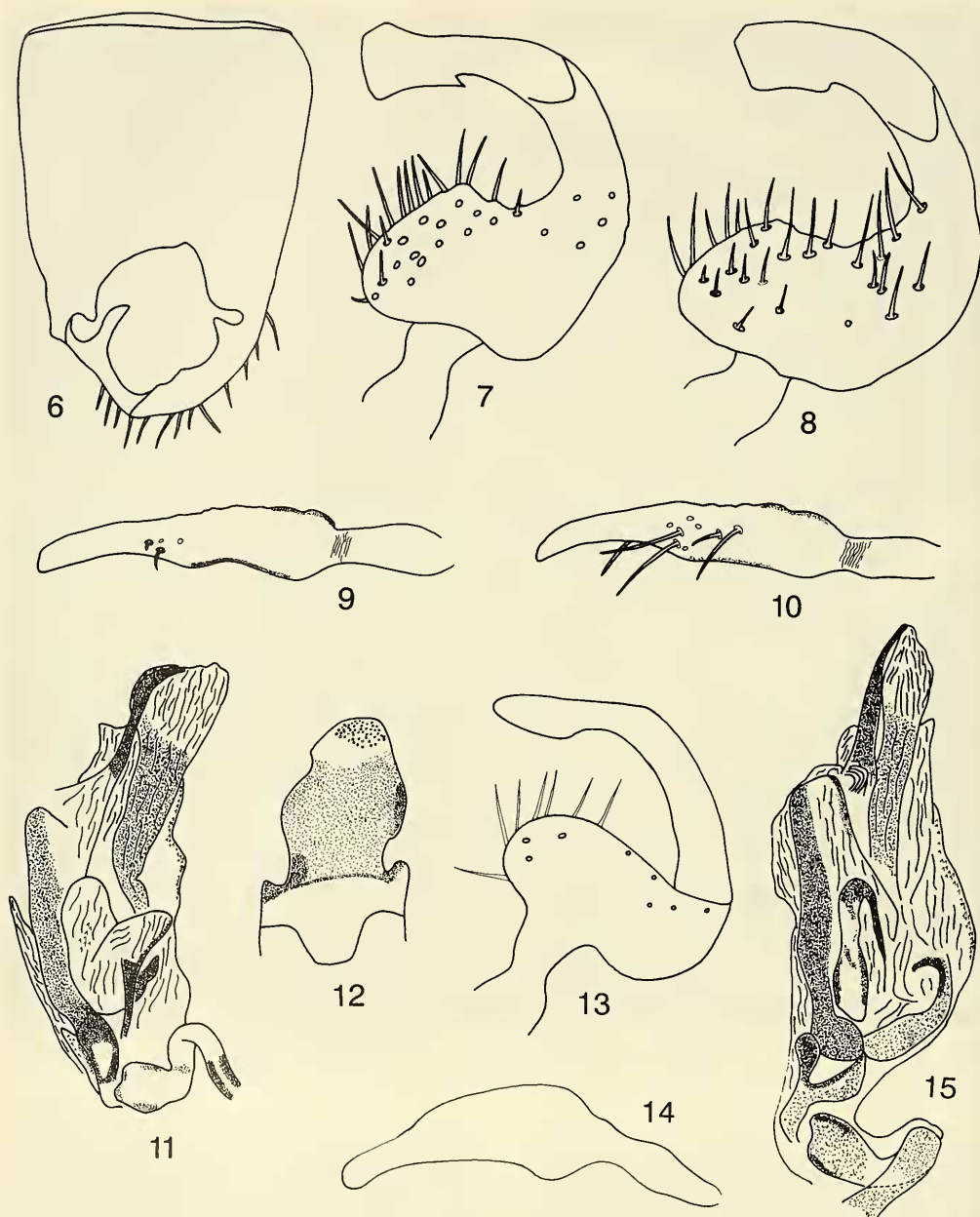
margin of eye. Antennae: Cylindrical, linear, inserted slightly below middle of eye in lateral view (fig. 2); segment I weakly bowed; segments II and III slightly narrower than I; segment IV slightly narrower than III; all segments with pale, reclining, simple setae of length 1.0-1.5 times diameter of corresponding segment; segment I also with series of heavier, pale, bristlelike setae on dorsal and lateral surfaces. Pronotum: Trapeziform, posterior width of disk about 1.5 times anterior width; anterior margin with well-developed, weakly convex collar, width of collar equal to or slightly greater than diameter of antennal segment I; calli moderately convex, rising abruptly



Figs. 2-5. Scanning electron micrographs of *Diocleroides sulawesi*. – 2, lateral view of head and pronotum; 3, peritreme and evaporative area of metathoracic scent efferent system; 4, apex of genital capsule, left lateral view; 5, pretarsus.

from collar, occupying most of anterior lobe of disk and reaching its lateral margins, confluent medially, posterior borders weakly defined; lateral margins of disk straight or slightly concave, posterior margin straight or very weakly concave medially. Mesoscutum: Narrowly exposed. Scutellum: Weakly elevated; dorsal surface flattened anteromedially, otherwise very weakly convex. Metathoracic scent efferent system: Evaporative area well-developed; peritreme bulbous, mostly smooth (fig. 3). Hemelytra: Parallel-sided with lateral margins slightly convex, or

sometimes weakly concave medially; embolium cylindrical, similar in thickness to antennal segment I; cuneus 1.5-2.0 times as long as broad; cuneal incisure shallow, fracture strongly oblique; membrane with two distinct cells, primary cell elongate, narrowed apically, secondary cell narrowly triangular. Legs: Femora narrowly elongate; metafemora with points of insertion of trichobothria 2-4 not noticeably swollen; tibiae cylindrical, with pale spines and several rows of minute, dark spinules; tarsi elongate, linear or with segment III very slightly swollen distally; pre-



Figs. 6-15. Male genitalia of *Diocleroides* species. — 6-12. *Diocleroides sulawesi*. — 6, genital capsule, dorsal view; 7, left paramere, dorsal view; 8, left paramere, dorsal view, variation; 9, right paramere, lateral view; 10, right paramere, lateral view, variation; 11, vesica, anterodorsal view; 12, phallosome. — 13-15. *Diocleroides philippinensis*. — 13, left paramere, dorsal view; 14, right paramere, lateral view; 15, vesica, anterodorsal view.



tarsus as in figure 5; pulvillus without comblike row of trichia on posteroventral margin. Genitalia: Genital capsule (fig. 6): Longer than broad, slightly narrowed and rounded to apex; aperture subovate, primarily dorsal in orientation; right margin of aperture distal to paramere socket elevated, flangelike, weakly reflexed; left distal margin of aperture deeply excavated; right paramere socket well below left socket in posterior view; inner margins of paramere sockets produced. Left paramere (figs. 7, 8, 13): Sensory lobe greatly expanded; angle broadly curved; shaft as long as or longer than arm, dorsoventrally flattened especially apically, sometimes with broad acute protuberance on dorsal surface and smaller notch on inner distal margin; apex rounded or truncate, sometimes broadly spatulate in dorsal view; sensory lobe and outer surface of arm with long, stout setae. Right paramere (figs. 9, 10, 14): Elongate, gradually narrowed distally, sometimes more strongly narrowed preapically, with rounded or blunt apex. Phallobase: Large, dorsoventrally flattened, strongly produced posteriorly. Phallotheca (fig. 12): Strongly sclerotized, with distinct basolateral notches; slightly compressed distally with weakly concave innerdistal surface and narrow elongate opening apically. Vesica (figs. 11, 15): Mostly membranous, with elongate sclerite along left basal margin and smaller, narrower sclerite apically; membranous regions weakly sclerotized in part medially and distally, and with patches of small spines posteriorly; ductus seminis sclerotized, weakly expanded distally.

Female. – Macropterous, length 3.45–4.05; similar to male in colour, structure and vestiture except as noted in species descriptions.

Etymology. – Named for its similarity of appearance to *Dioclerus* Distant.

Type species. – *Diocleroides sulawesi* sp. n.

Distribution. – Philippine Islands and Sulawesi.

Discussion. – Within the Ecritotarsini, *Diocleroides* belongs to a group of genera recognized by the following diagnostic features: posterior margin of head strongly carinate; calli inflated and medially confluent; embolium broadly explanate; hemelytral membrane with two well-developed cells; metathoracic scent efferent system with bulbous peritreme and well-developed evaporative area; pretarsal pulvilli without comblike row of trichia on posteroventral margin; and male genitalia with large flattened phallobase, heavily sclerotized phallotheca, and extensively membranous vesica. The genera placed in this group by Stonedahl (1988) are *Bunsua* Carvalho (tropical Africa), *Bryocorellisca* Carvalho, *Carinimiris* Carvalho, and *Crassiembolius* Carvalho (all New Guinea), and *Dioclerus* (Sri Lanka, India, Indochina, East and West Malaysia). *Diocleroides* is easily distinguished from these genera by its elongate body form,

thickened embolium, strongly concave posterior margin of the head, and by the structure of the male genitalia. The condition of the costal margin in *Diocleroides* is atypical of the group. Since a broad, flattened embolium appears to be synapomorphic for the *Dioclerus* complex, its narrow, thickened condition in *Diocleroides* most likely represents a reversal to the plesiomorphic character state.

#### *Diocleroides sulawesi* sp. n.

(figs. 1–12)

Type material. – Holotype ♂, Indonesia, Sulawesi Utara, Dumoga-Bone National Park, 8.II.1985 (Plot B, Fog 3, 315 m), Project Wallace Expedition (BMNH). – Paratypes: 4♂ and 4♀, same data as holotype (AMNH, BISH, BMNH).

Additional specimens. – 4♂ and 1♀, same data as holotype (BMNH).

Diagnosis. – Distinguished from *D. philippinensis* by the extensively darkened body (fig. 1), antennal segment II much longer than width of head across eyes, elongate right paramere of male genitalia (figs. 9, 10), and left paramere with prominent notch on dorsal surface of arm and distinct subquadrate apex (figs. 7, 8).

Description of male (n=4). – Length 3.45–3.60; dark brown and dirty white general coloration. Head: Length 0.15; width across eyes 0.72–0.76; width of vertex 0.29–0.31; brown dorsally, paler yellowish brown ventrad of antennal fossae; antennal segment I pale yellow, segments II–IV dark brown; length of antennal segment I 0.60, II 1.20, III 0.30, IV 0.60–0.75; labium pale yellowish brown, apex of segment IV fuscous, length 0.77–1.02. Pronotum: Median length 0.75; posterior width 0.90–1.05; brown to dark brown; humeral angles and median stripe behind calli pale grayish white; lateral margins weakly concave; posterior margin nearly straight. Scutellum: Length 0.30; dark brown to nearly black. Hemelytra: Clavus, inner portion of corium mostly distal to apex of clavus, embolium, and inner margin and apex of cuneus brown or dark brown; remaining portions of corium and cuneus pale grayish white; membrane strongly suffused with fuscous, veins dark. Legs: Dirty white to pale brownish yellow. Venter: Mostly dark brown. Genitalia: As in figures 6–12.

Female (n=4). – Similar to male in colour and structure, except darkened portions of hemelytra nearly black. Total length 3.50–4.05. Head: Length 0.15; width across eyes 0.75; width of vertex 0.30; length of antennal segments I 0.60, II 1.20, III 0.30, IV 0.60–0.75. Pronotum: Median length 0.76, posterior width 0.90–1.05. Scutellum: Length 0.30.

Etymology. – Named for its occurrence in

Sulawesi; a noun in apposition.

Distribution. – Indonesia, Sulawesi.

Discussion. – Five specimens were examined from the type locality that differ from the holotype in the colour of the second antennal segment (basal one-third pale, distal two-thirds dark brown), darkened humeral angles of the pronotum, and more extensively darkened corium. Two males from this group also had the left paramere of the genitalia with a more pronounced, subquadrate sensory lobe, and the shaft with a broader apex and deeper notch on the inner distal margin (fig. 7). The genitalic structures of the other males were found to be intermediate in form. Since the external differences in colour are not supported by consistent differences in either external morphology or the structure of the male genitalia, we are treating all five specimens as conspecific with the holotype, but are not included them as paratypes.

*Diocleroides philippinensis* sp. n.

(figs. 13-15)

Type material. – Holotype ♂, Philippine Islands, Negros Island, Camp Lookout, Dumaguete, 1600 ft, 7.IV.1961, Schneirla and Reyes (AMNH). – Paratype ♀, same data as holotype, except 15.II-15.IV.1961 (AMNH).

Diagnosis. – Recognized by the uniform pale grayish white colour, antennal segment II only slightly longer than width of head across eyes, and by the structure of the parameres of the male genitalia (figs. 13, 14).

Description of male (n=1). – Length 3.45; grayish white general coloration. Head: Length 0.15, width across eyes 0.80; vertex pale yellow, width 0.30; antennal segment I pale yellow, slightly darker distally, length 0.60; segment II light brown, length 0.88; segments III and IV missing; labium pale yellowish brown, apex of segment IV brown; length 0.97. Pronotum: Median length 0.75, posterior width 0.90; pale grayish white; center of disk tinged with brown; lateral margins straight; posterior margin very weakly concave medially. Scutellum: Short, pale yellow, length 0.37. Hemelytra: Pale grayish white; commissure slightly more than twice as long as scutellum; membrane lightly suffused with fuscous along outer margin, veins pale. Legs: Uniformly pale yellow; pretarsal claws brown. Venter: Pale, abdominal segment IX fuscous. Genitalia: As in figures 13-15.

Female (n=1). – Similar to male in colour and structure, except antennal segment I more broadly suffused with fuscous dorsally. Total length 3.45. Head: Length 0.18; width across eyes 0.85; width of vertex 0.39; antennal segment I mostly brown dorsally, length 0.55; segment II uniformly dark brown,

length 0.80; segment III brown, length 0.44; segment IV missing. Pronotum: Median length 0.75; posterior width 0.90. Scutellum: Length 0.37. Venter: Abdominal segments VIII and IX fuscous.

Etymology. – Named for its occurrence in the Philippine Islands.

Distribution. – Philippine Islands, Negros Island.

*Gressittiana* gen. n.

Diagnosis. – Recognized by the elongate body form (fig. 16); prominent eyes with weakly concave posterior margin; coarsely punctate pronotal disk with broad, flattened anterior collar, and deep notch anterolaterally (fig. 16); posterior lobe of pronotal disk projecting over base of scutellum; hemelytra with sinuate lateral margins, poorly defined cuneal fracture, and elongate cuneus; broad right paramere (lateral view) with bifurcate apex (figs. 21, 22); and vesica with single, elongate membranous sac apically (fig. 25).

Description of male. – Macropterous, length 3.15-3.30; dark brown general coloration; legs and antennae mostly pale yellow; pronotum coarsely punctate; scutellum and hemelytra with shallow, irregular punctures producing a roughened appearance; dorsum with moderately dense covering of pale, suberect, simple setae, length of setae 1.0-1.5 times greatest diameter of antennal segment I. Head: Short, weakly produced and nearly vertical anterior to antennal fossae; posterior margin, excluding eyes, straight; vertex weakly convex, twice as broad as eye in dorsal view; frons moderately convex, meeting tylus along distinct depression; tylus moderately produced; maxillary and mandibular plates weakly convex; genae and gula well-developed; bucculae short; buccal cavity small, subspherical; labium reaching between mesocoxae, segment I much thicker than remaining segments; eyes prominent, projecting laterally beyond and slightly behind anterolateral angles of pronotum in dorsal view, weakly elevated above dorsal surface of head, posterodorsal margin weakly concave and conforming to anterior margin of pronotum, occupying about half of head height and strongly narrowed posteriorly in lateral view; antennal fossa nearly contiguous with anterior margin of eye. Antennae: Cylindrical, linear, inserted slightly below level of dorsal margin of eye in lateral view (fig. 17); segment I slightly thicker subbasally, about as long as width of vertex; segment II weakly enlarged apically, slightly more than twice as long as segment I; segment III broken or missing; segment IV missing; all observed segments with pale, reclining, simple setae of length 1.0-1.5 times diameter of corresponding segment. Pronotum: Trapeziform, slightly broader than long, posterior width of disk about twice anterior

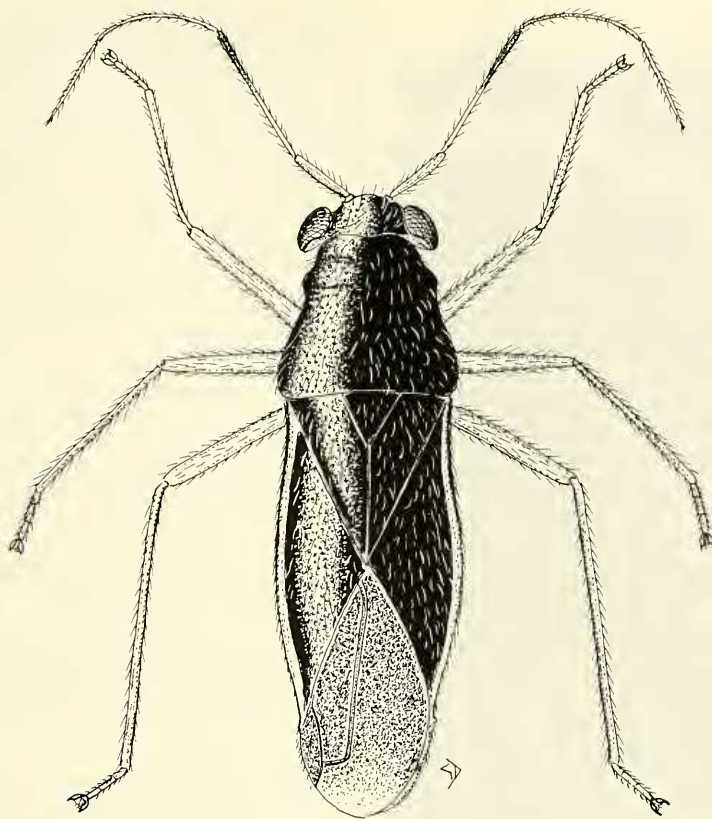
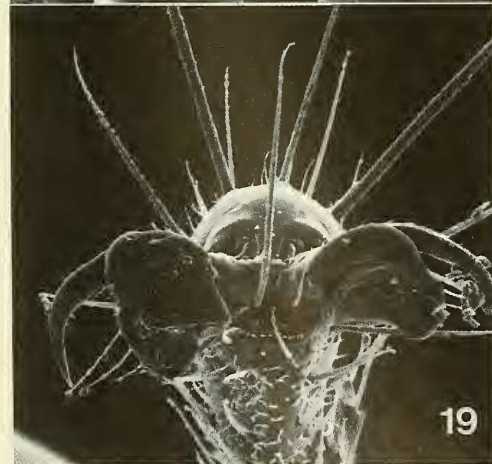


Fig. 16. *Gressittiana kuchingensis*, dorsal habitus ♂.

or width; anterior margin with broad, flattened collar of width more than twice the diameter of antennal segment I; calli weakly convex, with poorly defined anterior and posterior borders, reaching to lateral margins of disk, separated anteromedially by deep subspherical depression; lateral margin of disk with prominent notch at level of posterior margin of calli corresponding to deep propleural excavation; posterior lobe of disk weakly swollen, projecting over base of scutellum; posterior margin of disk weakly concave medially. Propleuron: Coarsely punctate; proepisternum broadly developed; propleural and tergopleural sutures strongly depressed, meeting in a deep excavation. Mesoscutum: Concealed by overlaying pronotal disk. Scutellum: Weakly elevated; compressed mid-laterally; distinctly flattened anteromedially. Metathoracic scent efferent system: Peritreme narrowly tonguelike, with series of stout setae along posterior margin; evaporative area narrowly developed

anterior to peritreme (fig. 18). Hemelytra: Elongate; costal margin sinuate; embolium cylindrical, of near uniform width throughout; cuneus three times longer than broad, less heavily sclerotized than corium with inner margin weakly differentiated from membrane; cuneal incisure shallow, fracture strongly angled anteriorly; membrane with single, elongate primary cell, secondary cell obsolete. Legs: Femora narrow, elongate, nearly cylindrical; metafemora with points of insertion of trichobothria 2-4 swollen; tibiae cylindrical, with pale spines and several rows of minute, pale spinules; tarsi dilated distally; pretarsus as in figure 19; all legs with pale, reclining or semierect, simple setae. Genitalia: Genital capsule (fig. 20): Slightly broader than long, slightly narrowed distally, with broadly rounded apex; aperture broad, subovate, posterodorsal in orientation; paramere sockets close set, left socket slightly below right socket in posterior view; inner margins of paramere sockets enlarged,





platelike; aperture anterior to paramere insertions spanned by irregular sclerite. Left paramere (figs. 23, 24): Sensory lobe broad, weakly elevated; angle evenly curved; shaft shorter than arm, gradually narrowed distally, slightly expanded before apex; outer surface of arm with several stout setae; apex narrowly rounded. Right paramere (figs. 21, 22): Relatively short and broad; outer surface with long, stout setae; apex bifurcate. Phallobase: Small, compact. Phallosome: Entirely membranous. Vesica (fig. 25): Tubular, weakly curved, extensively sclerotized; posterodistal surface membranous; posterobasal surface with field of small spines; apex of tubular sclerite with single, elongate membranous sac.

Female. – Macropterous, length 3.37–3.45; similar to male in colour, structure and vestiture except as noted in species description.

Etymology. – Named in honour of G. L. Gressitt, collector of many new species of Miridae and other insects throughout Southeast Asia and the Pacific Islands.

Type species. – *Gressittiana kuchingensis* sp. n.

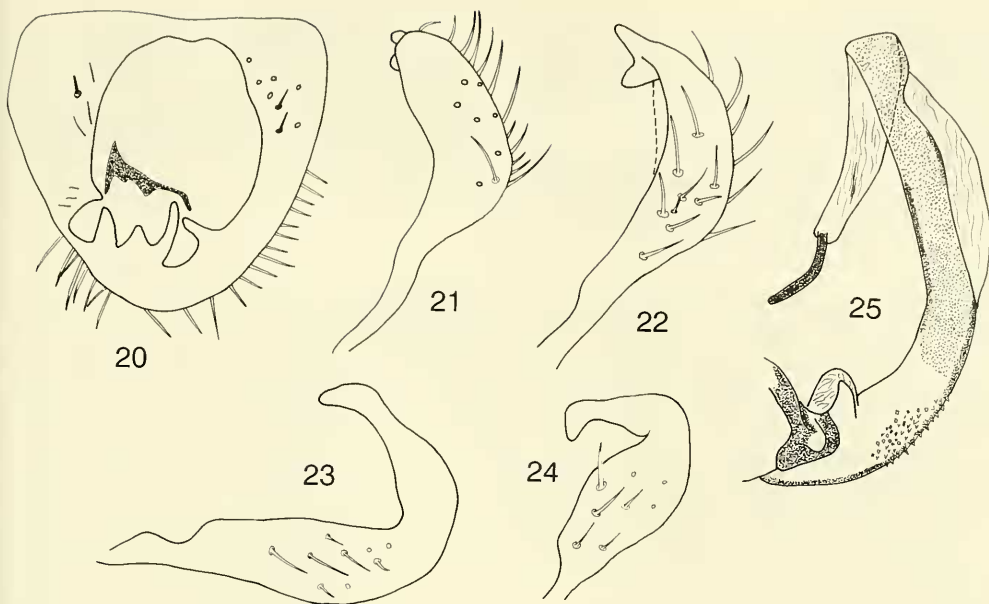
Discussion. – Characters of the external morphology and male genitalia support the placement of *Gressittiana* in a group of genera recognized by the following diagnostic features: (1) small body size, length 2.5–4.6 mm; (2) moderately to strongly inflated posterior lobe of pronotal disk that projects over base of scutellum; (3) paramere sockets with prominent, sometimes inflated, processes on inner margins; and (4) right paramere short and broad. The genera placed in this group by Stonedahl (1986, 1988) are *Eofurios* Poppius, *Ernestinus* Distant, *Microbryocoris* Poppius, *Myiocapsus* Poppius, *Palaeofurios* Poppius, and *Stylopomiris* Stonedahl. *Gressittiana* is easily distinguished from these genera by the broad, flattened pronotal collar, hemelytra with sinuate lateral margins and obsolete cuneus, and by the structure of the vesica.

#### *Gressittiana kuchingensis* sp. n. (figs. 16–25)

Type material. – Holotype ♂, Borneo, Sarawak, Kuching, Matang, 450–894 m, 15.IX.1958, ex *Alpinia*, J. L. Gressitt (BISH). – Paratypes: Sabah: 1 ♂, 1 ♀, Gomantong Caves, 22–26.XI.1958, T. C. Maa (BISH); 1 ♂, Sandakan Bay (SW), Sapagaya Lumber

Figs. 17–19. Scanning electron micrographs of *Gressittiana kuchingensis*. – 17, lateral view of head and pronotum; 18, peritreme and evaporative area of metathoracic scent efferent system; 19, pretarsus.





Figs. 20-25. Male genitalia of *Gressittiana kuchingensis*. – 20, genital capsule, posterodorsal view; 21, right paramere, dorsal view; 22, right paramere, ventral view; 23, left paramere, dorsal view; 24, left paramere, dorsolateral view; 25, vesica, right lateral view.

Camp, 2-20 m, 6.XI.1957, ex *Alpinia*, J. L. Gressitt (BISH). Sarawak: 1♂, 1♀, same data as holotype (AMNH, BISH); 1♂, Kuching, J. Hewitt (BMNH).

Diagnosis. – Recognized by the characters given in the generic diagnosis.

Description of male (n=3). – Length 3.15-3.30; general coloration, surface texture and dorsal vestiture as in generic description. Head: Length 0.15; width across eyes 0.75; width of vertex 0.30, dark yellowish brown; clypeus dirty white; maxillary plate, mandibular plate and gula pale yellow; antennal segment I pale yellow, length 0.45-0.55; segment II pale yellow, apical one-fourth brown; segments III and IV missing; labium pale yellow, segment IV narrowly darkened apically, length 0.77-0.91. Pronotum. Median length 0.90; posterior width 0.90-0.97, uniformly dark brown. Scutellum: Length 0.30, dark brown. Hemelytra: Basal half of clavus dark brown, distal half of clavus and all of corium lighter brown; embolus pale yellowish brown; cuneus brown or pale grayish brown, outer margin weakly convex; membrane strongly suffused with fuscous, veins dark. Legs: Uniformly pale yellow. Venter: Dark brown. Genitalia: As is figures 20-25.

Female (n=2). – Similar to male in colour and

structure, except hemelytra darker brown distally. Total length 3.37-3.45. Head: Length 0.18-0.22; width across eyes 0.60; width of vertex 0.60; antennal segments III and IV linear, slightly thinner than segment II, uniformly pale yellow; length of antennal segments I 0.37-0.45, II 0.86, II 0.74, IV 0.55. Pronotum: Median length 0.90; posterior width 0.90. Scutellum: Length 0.30.

Etymology. – Named for the type locality, Kuching, Sarawak.

Distribution. – East Malaysia.

Discussion. – Four specimens of the type series were collected on a species of *Alpinia* Roxb. (Zingiberaceae). Several species of this plant genus are used as food condiments and/or for medicinal purposes in parts of Southeast Asia and the Pacific.

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pared the dorsal habitus illustration of *Diocleroides sullawesi* and *Gressittiana kuchingensis*. Assistance with preparation of the scanning electron micrographs was received from Louisa Jones, Natural History Museum, London.

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#### REFERENCES

Stonedahl, G. M., 1986. *Stylopomiris*, a new genus and three

species of Eccritotarsini (Heteroptera: Miridae: Bryocorinae) from Viet Nam and Malaya. – Journal of New York Entomological Society 94: 226-234

Stonedahl, G. M., 1988. Revisions of *Dioclerus*, *Harpedona*, *Mertila*, *Myiocapsus*, *Prodromus*, and *Thaumastomiris* (Heteroptera: Miridae: Bryocorinae: Eccritotarsini). – Bulletin of the American Museum of Natural History 187: 1-99.

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